US009444131B2

(12) **United States Patent**
Uttermann et al.

(10) **Patent No.: US 9,444,131 B2**
(45) **Date of Patent: Sep. 13, 2016**

(54) **ANTENNA, SHIELDING AND GROUNDING**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 245 days.

(21) Appl. No.: **14/195,974**

(22) Filed: **Mar. 4, 2014**

(65) **Prior Publication Data**

US 2014/0185857 A1 Jul. 3, 2014

Related U.S. Application Data

(63) Continuation of application No. 13/018,184, filed on Jan. 31, 2011, now Pat. No. 8,665,160.

(51) **Int. Cl.**

H01Q 1/24	(2006.01)
H01Q 1/42	(2006.01)
H04R 1/02	(2006.01)

(52) **U.S. Cl.**

CPC ***H01Q 1/243*** (2013.01); ***H01Q 1/42*** (2013.01); ***H04R 1/028*** (2013.01); *Y10T 29/49016* (2015.01); *Y10T 156/1089* (2015.01)

(58) **Field of Classification Search**

CPC H01Q 1/243; H01Q 1/42; H04R 1/028; Y10T 156/1089; Y10T 29/49016

USPC 343/702, 841, 846; 381/388

See application file for complete search history.

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(57) **ABSTRACT**

A portable computing device is disclosed. The portable computing device can take many forms such as a laptop computer, a tablet computer, and so on. The portable computing device can include a single piece housing formed from a radio opaque material with a cover formed from a radio transparent material. To implement a wireless interface, an antenna stack-up can be provided that allows an antenna to be mounted to a bottom of the cover. Methods and apparatus are provided for improving wireless performance. For instance, in one embodiment, a metal housing can be thinned to improve antenna performance. As another example, a faraday cage can be formed around speaker drivers to improve antenna performance.

20 Claims, 16 Drawing Sheets